WHAT IS CLAIMED IS

1. A routing control method in a mixed environment of a hierarchical network and a non-hierarchical network, comprising:

assigning the non-hierarchical network a virtual hierarchy number that corresponds to a hierarchy number in the hierarchical network,

attaching the virtual hierarchy number to a packet to be relayed at a router located at an entrance from the non-hierarchical network to the hierarchical network when the packet is to be relayed between non-hierarchical networks via the hierarchical network,

performing a hierarchical routing control by the virtual hierarchy number within the hierarchical network, and

removing the virtual hierarchy number from the packet to be relayed at a router located at an exit from the hierarchical network to the non-hierarchical network.

2. The routing control method in the mixed environment of the hierarchical network and the non-hierarchical network as claimed in claim 1, wherein an address of the non-hierarchical network is accommodated in an interface identification information block of an address format of the hierarchical network, and the virtual hierarchy number is accommodated in a hierarchy information block of the address format of the hierarchical network for conventional packet relaying defined in the hierarchical network and transmitting routing information.

3. The routing control method in the mixed environment of the hierarchical network and the non-hierarchical network as claimed in claim 2, wherein each router of the hierarchical network comprises a hierarchical routing table that performs routing search by using only the hierarchical information block as a key, and a conventional routing table that performs routing search by using the hierarchical information block hierarchical information and the interface identification information block as keys.

4. The routing control method in the mixed environment of the hierarchical network and the non-hierarchical network as claimed in claim 3, wherein

each router of the hierarchical network uses the hierarchical routing table when relaying a packet between the hierarchical network and another hierarchical network.

5. The routing control method in the mixed environment of the hierarchical network and the non-hierarchical network as claimed in claim 3, wherein each router of the hierarchical network uses the conventional routing table when relaying a packet from the hierarchical network to the non-hierarchical network, and from the non-hierarchical network to the hierarchical network.

6. The routing control method in the mixed environment of the hierarchical network and the non-hierarchical network as claimed in claim 5, wherein the router located at a boundary of the non-hierarchical network and the hierarchical network recognizes a packet relay from the non-hierarchical network to the hierarchical network, and from the hierarchical network to the non-hierarchical network, by using a receiving interface name and a transmission interface name when relaying the packet.

7. A routing control apparatus in a mixed environment of a hierarchical network and a non-hierarchical network, comprising:

virtual hierarchy number assigning means for assigning the non-hierarchical network a virtual hierarchy number that corresponds to a hierarchy number in the hierarchical network, and for attaching the virtual hierarchy number to a packet to be relayed at a router located at an entrance from the non-hierarchical network to the hierarchical network when the packet is to be relayed between non-hierarchical networks via the hierarchical network,

routing control means for performing a hierarchical routing control by the virtual hierarchy number within the hierarchical network, and

virtual hierarchy number removing means for removing the virtual hierarchy number from the packet to be relayed at a router located at an exit from the hierarchical network to the non-hierarchical network.

8. The routing control apparatus as claimed in claim 7, wherein the virtual hierarchy number

assignment means accommodates an address of the non-hierarchical network in an interface identification information block of an address format of the hierarchical network, and accommodates the virtual hierarchy number in a hierarchy information block of the address format of the hierarchical network for performing conventional packet relay defined in the hierarchical network and transmitting routing information.

9. The routing control apparatus as claimed in claim 8, wherein each router of the hierarchical network comprises a hierarchical routing table that performs routing search by using only the hierarchical information block as a key, and a conventional routing table that performs routing search by using the hierarchical information block hierarchical information and the interface identification information block as keys.

10. The routing control apparatus as claimed in claim 9, wherein each router of the hierarchical network comprises hierarchical routing search means that performs routing search using the hierarchical routing table when relaying a packet between the hierarchical network and another hierarchical network.

11. The routing control apparatus as claimed in claim 9, wherein each router of the hierarchical network comprises conventional routing search means that performs routing search using the conventional routing table when relaying a packet from the hierarchical network to the non-hierarchical network, and from the non-hierarchical network to the hierarchical network.

12. The routing control apparatus as claimed in claim 11, wherein the router located at a boundary of the non-hierarchical network and the hierarchical network comprises recognition means that recognizes a packet relay to be from the non-hierarchical network to the hierarchical network, and to be from the hierarchical network to the non-hierarchical network, using a receiving interface name and a transmission interface name when relaying the packet.